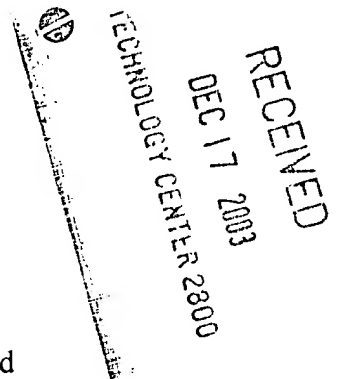




## AMENDMENTS

## CLAIMS AMENDMENTS

1. (currently amended) A circuit, comprising:  
a nonlinear transmission line circuit having an input and an output; and  
a pulse-forming circuit coupled to the nonlinear transmission line, the pulse-forming circuit including a reverse-biased diode coupled in series with ~~to~~ the output of the nonlinear transmission line circuit.
2. (original) The circuit according to claim 1, further including a co-planar waveguide in which the nonlinear transmission line is disposed.
3. (original) The circuit according to claim 1, wherein the circuit is fabricated from high-resistivity silicon.
4. (original) The circuit according to claim 1, wherein the nonlinear transmission line includes a plurality of reverse-biased Schottky diodes coupled to a central conductor.
5. (original) The circuit according to claim 1, further including a gate device coupled to the pulse-forming circuit.
6. (original) The circuit according to claim 5, further including a modulator coupled to the gate and a laser coupled to the modulator for generating optical pulses.



7. (original) The circuit according to claim 6, wherein the modulator is a 10 GHz LiNbO<sub>3</sub> modulator.
8. (original) The circuit according to claim 7, wherein the circuit generates signals at a rate of at least 10 Gbit/s.
9. (original) The circuit according to claim 7, wherein the circuit generates optical pulses less than about 27 picoseconds FWHM.
10. (original) The circuit according to claim 7, wherein the gate is a dual-gate FET.
11. (original) The circuit according to claim 10, wherein the gate is a Si/SiGe heterostructure bipolar transistor.
12. (original) A data transmission system, comprising:
  - a nonlinear transmission line;
  - a pulse-forming circuit coupled to the nonlinear transmission line;
  - a gate coupled to the pulse-forming circuit;
  - an optical modulator coupled to the gate; and
  - a laser coupled to the modulator.
13. (original) The system according to claim 12, wherein the system is integrated on a silicon substrate.
14. (original) The system according to claim 12, wherein the gate includes a dual-gate FET.

15. (original) The system according to claim 12, wherein the pulse-forming circuit includes a reverse-biased diode.

16. (original) A method of generating optical pulses, comprising:  
electrically modulating an output signal from a pulse-forming circuit coupled to a nonlinear transmission line; and  
modulating an output signal from the pulse-forming circuit with a laser-generated signal to provide an optical signal.

17. (original) The method according to claim 16, wherein the pulse-forming circuit includes a reverse-biased diode coupled to the nonlinear transmission line.

18. (original) The method according to claim 16, further including inserting the nonlinear transmission line within a waveguide.

19. (original) The method according to claim 16, further including fabricating the nonlinear transmission line from high-resistivity silicon.

20. (original) The method according to claim 16, further including integrating a gate, the modulator, the laser, the nonlinear transmission line, and the pulse-forming circuit on a silicon substrate.